

AMENDMENTS TO THE CLAIMS

1. (WITHDRAWN) A synthesis method for synthesizing a Si/C/N/E_a/F_b/G_c/O multielement nanopowder directly suitable for sintering, where E, F, and G represent three distinct metallic elements other than Si, and at least one of a, b, and c is non-zero, the method comprising the following steps:

- using an aerosol generator to generate an aerosol comprising at least one metal precursor containing at least one of said metallic elements, and hexamethyldisilazane Si₂C₆NH₁₉, used as a main source of Si and as the sole solvent for said at least one metal precursor;
- adding to said aerosol silane SiH₄ or its equivalent in gaseous form so as to form a reaction mixture; and
- proceeding with laser pyrolysis of said reaction mixture.

2. (WITHDRAWN) A synthesis method according to claim 1, wherein said metallic elements are selected from Al, Y, Mg, Yb, and La.

3. (WITHDRAWN) A synthesis method according to claim 1, wherein at least one metal precursor comprises yttrium isopropoxide C₉H₂₁O₃Y.

4. (WITHDRAWN) A synthesis method according to claim 1, wherein at least one metal precursor comprises aluminum secbutoxide C₁₂H₂₁O₃Al.

5. (WITHDRAWN) A synthesis method according to claim 1, wherein at least one metal precursor comprises aluminum isopropoxide $C_9H_{21}O_3Al$.

6. (WITHDRAWN) A synthesis method according to claim 1, wherein ammonia NH_3 or its equivalent, in gaseous form, is also added to said aerosol.

7. (WITHDRAWN) A method of fabricating a composite ceramic, wherein a $Si/C/N/E_a/F_b/G_c/O$ multielement nanopowder directly suitable for sintering is synthesized using the synthesis method according to claim 1; and said nanopowder is sintered directly.

8. (WITHDRAWN) A $Si/C/N/E_a/F_b/G_c/O$ multielement nanopowder in which E, F, and G represent three distinct metallic elements, other than Si, and at least one of a, b, and c is non-zero, characterized in that it is directly suitable for sintering without needing to be subjected to a prior mixing or annealing step, in that each nanopowder grain contains all of the elements Si, C, N, E_a , F_b , G_c , and O, and in that it presents a chemical composition expressed in terms of equivalent stoichiometric compounds, as determined by calculation from element analysis, such that the free carbon content is less than 2% by weight and the SiO_2 content is less than 10% by weight.

9. (WITHDRAWN) A nanopowder according to claim 8, characterized in that the metallic elements E, F, and G are selected from Al, Y, Mg, Yb, and La.

10. (WITHDRAWN) A nanopowder according to claim 9, characterized in that the metallic elements E and F are respectively aluminum Al and yttrium Y.

11. (WITHDRAWN) A nanopowder according to claim 8, characterized in that the index c of G_c is zero, such that the nanopowder contains only the two metallic elements E and F.

12. (WITHDRAWN) A nanopowder according to claim 16, wherein the chemical composition expressed in terms of equivalent stoichiometric compounds, determined by calculation from element analysis, is such that the sum of the contents of Al₂O₃ and Y₂O₃ is greater than 3%.

13. (WITHDRAWN) The use of a Si/C/N/E_a/F_b/G_c/O multielement nanopowder according to claim 8 for fabricating a composite ceramic.

14. (CURRENTLY AMENDED) A composite ceramic of the Si₃N₄/SiC type prepared from a Si/C/N/E_a/F_b/G_c/O multielement nanopowder where E, F, and G represent three distinct metallic elements, other than Si, and where at least one of a, b, and c is non-zero, ~~that is suitable for being obtained by a fabrication method such that the grains constituting it of the composite ceramic are of a size smaller than 100 nanometers, and such that the composite ceramic has a density that is equal to at least 99.5% of its theoretical density.~~

15. (CANCELED)

16. (WITHDRAWN) A nanopowder according to claim 10, characterized in that the index c of G_c is zero, such that the nanopowder contains only the two metallic elements E and F.

17. (WITHDRAWN) The use of a Si/C/N/ E_a / F_b / G_c /O multielement nanopowder according to claim 12 for fabricating a composite ceramic.

18. (NEW) The composite ceramic according to claim 14, wherein the metallic elements E and F are respectively aluminum (Al) and yttrium (Y).

19. (NEW) The composite ceramic according to claim 14, wherein the index c of G_c is zero, such that the nanopowder contains only two metallic elements, E and F.

20. (NEW) The composite ceramic according to claim 18, wherein the index c of G_c is zero, such that the nanopowder contains only two metallic elements, Al and Y.

21. (NEW) The composite ceramic according to claim 14, wherein the multielement nanopowder is produced by laser pyrolysis.

22. (NEW) The composite ceramic according to claim 14, wherein each grain of the multielement nanopowder comprises all of the elements Si, C, N, E_a , F_b , G_c , and O.